

**REMARKS**

**Summary of the Office Action**

Claims 1-3 and 5-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim (US 5,790,222) in view of Shin (US 5,828,433).

Claims 8-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim in view of Shin and Wook (US 5,894,136).

**Summary of the Response to the Office Action**

Applicants amend claim 1 to further define the invention. Accordingly, claims 1-3 and 5-28 are pending with claims 11-28 being withdrawn from consideration.

**All Claims Define Allowable Subject Matter**

Claims 1-3 and 5-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim (US 5,790,222) in view of Shin (US 5,828,433), and claims 8-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim in view of Shin and Wook (US 5,894,136).

Applicants respectfully traverse these rejections as being based upon references that neither teach nor suggest the novel combination of features recites in amended independent claim 1, and hence dependent claims 2, 3 and 5-10.

Independent claim 1, as amended, recites an array substrate for a liquid crystal display device including “a data line including a first data line having a first width and a second data line having a second width *overlying an entire length of the first data line*, the second width is larger than the first width,” (emphasis added). In contrast to Applicants’ claimed invention, Kim explicitly teaches segmented lower data bus lines 43 and segmented upper data bus lines 49 disposed along the portions of the lower data bus lines 43 in order to electrically interconnect each of the segmented lower data bus lines 43. Accordingly, Applicants respectfully assert that

Kim fails to teach or suggest “a data line including a first data line having a first width and a second data line having a second width *overlying an entire length of the first data line*, the second width is larger than the first width,” as recited by amended independent claim 1, and hence dependent claims 2, 3, and 5-10.

The Office Action apparently admits that Kim fails to teach or suggest the feature of “the pixel electrode being formed during a same process as the second data line.” Accordingly, the Office Action relies upon Shin for allegedly teaching (col. 5, lines 40-55) simultaneously formation of a pixel electrode and a data electrode. Thus, the Office Action concludes that it would have been obvious to “modify the pixel electrode and data line of Kim by forming them simultaneously as taught by Shin to reduce the manufacturing process and associated costs.” Applicants respectfully disagree.

First, the motivation (i.e., “to reduce the manufacturing process and associated costs”) alleged by the Office Action to be disclosed by Shin is solely directed toward the manufacturing process shown in Prior Art FIGs. 1a-1f of Shin. Accordingly, the Office Action’s allegation that Shin provides universal motivation with which to simultaneously form pixel and data electrodes is incorrect. Specifically, the motivation disclosed by Shin and cited by the Office Action in order to provide motivation to modify Kim is not applicable to Kim since the process disclosed by Kim is non-analogous to the manufacturing process of Prior Art FIGs. 1a-1f of Shin.

Second, Applicants respectfully assert that the teachings of Shin and/or Wook fail to remedy the deficiencies of Kim, as detailed above. Specifically, Applicants respectfully assert that neither Shin nor Wook, whether taken alone or in combination(s) with Kim, teach or suggest “a data line including a first data line having a first width and a second data line having a second

width *overlying an entire length of the first data line*, the second width is larger than the first width,” as recited by amended independent claim 1, and hence dependent claims 2, 3, and 5-10.

With regard to claims 8-10, the Office Action alleges that Wook provides proper motivation with which to modify the combined teachings of Kim and Shin. Specifically, the Office Action alleges that it would have been obvious to “modify the source electrode of Kim and Shin by forming a first source electrode having a first width and a second electrode having a second width as taught by Wook to reduce the contact resistance of the source electrode.”

Applicants respectfully disagree.

First, Applicants respectfully assert that Wook is completely silent with regard to any teaching that will “reduce contact resistance,” as alleged by the Office Action to be motivation with which to modify Kim and Shin. Accordingly, Applicants respectfully assert that the Office Action fails to establish a *prima facie* case of obviousness with regard to at least independent claims 8-10.

Second, Applicants respectfully assert that the full disclosure (col. 2, lines 9-39) under the heading of Discussion of the Related Art of Wook explicitly reveals that forming the data line having a chromium/silicon structure imparts a tensile stress to the glass substrate, thereby bending the substrate. Accordingly, Wook explicitly discloses that the data line becomes open, and thus, the reliability of the LCD device is reduced. Accordingly, Applicants respectfully assert that the Office Action fails to establish a *prima facie* case of obviousness with regard to at least independent claims 8-10.

Third, as Applicants have previously presented, the invention of Wook explicitly requires formation of the chromium data line 9 directly onto the amorphous silicon layer 8 in order to compensate for bending of the glass substrate 1. Accordingly, Applicants respectfully assert that

using the teachings of Wook would only be applicable to prior art references where a data line having an integral double layer structure is required. In contrast to Applicants' claimed invention, since the combined teachings of Kim and Shin would require using a passivation layer between lower and upper layers of a data line, Wook would not qualify as providing proper motivation with which to modify the structures of Kim and Shin since Wook explicitly requires deposition of chromium directly on underlying silicon layers without any intervening passivation layers. Accordingly, Applicants respectfully assert that the Office Action fails to establish a *prima facie* case of obviousness with regard to at least independent claims 8-10.

For at least the above reasons, Applicants further respectfully assert that Wook fails to remedy the deficiencies of Kim and Shin. Thus, Applicants respectfully assert that the combined teachings of Kim, Shin, and Wook, in any combination thereof, fails to establish a *prima facie* case of obviousness with regard to at least independent claim 1, as well as dependent claims 2, 3, and 5-10.

Therefore, Applicants respectfully assert that the rejections under 35 U.S.C. § 103(a) should be withdrawn because none of the applied prior art references, whether taken individually or in combination, teach or suggest the novel combination of features clearly recited in amended independent claim 1, and hence dependent claims 2, 3, and 5-10.

### **CONCLUSION**

In view of the foregoing, Applicants respectfully request reconsideration and timely allowance of the pending claims. Should the Examiner believe that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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